Approved for use through 07/31/2006. OMB 0651-0031 U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995 person are required to respond to a collection of information unless it contains a valid OMB control number. Substitute for form 1449/PTO Complete if Known **Application Number** 10/810,962 INFORMATION DISCLOSU Filing Date March 26, 2004 STATEMENT B' First Named Inventor RUECKES et al.

**2827 Examiner Name** IBA-Husin Hana Attorney Docket Number 112020.145YS2 NAN-21 Sheet of 4

Art Unit

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U. S. PATENT DOCUMENTS					
Examiner Cite No.		Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appea
Hy	+	Number-Kind Code <sup>2(f known)</sup> US 2002/0130311 A1	09-19-2002	LIEBER et al.	or Helevant Figures Appea
t. 0q	<del>                                     </del>	US 2002/0130351 A1	09-19-2002	LIEBER et al.	
		US 2002/0172963 A1	11-21-2002	KELLEY et al.	
	<del>                                     </del>	US 2002/0179434 A1	12-05-2002	DAI et al.	
		US-2003/0021966 A1	01-30-2003	SEGAL et al.	
		US-2003/0124325 A1	07-30-2003	RUECKES et al.	
		US-2003/0165074 A1	09-04-2003	SEGAL et al.	
		US-2003/0234407 A1	12-25-2003	VOGELI et al.	
		US-2003/0236000A1	12-25-2003	VOGELI et al.	
		US-2004/0085805 A1	05-06-2004	SEGAL et al.	-
		US-2004/0159833 A1	08-19-2003	RUECKES et al.	
		US-2004/0164289 A1	08-26-2003	RUECKES et al.	
•		US-2004/0175856 A1	09-09-2004	JAIPRAKASH et al.	
		US-2004/0181630 A1	09-16-2004	JAIPRAKASH et al.	
		US-2004/0191978 A1	09-30-2004	RUECKES et al.	
		US-2004/0214366 A1	10-28-2004	SEGAL et al.	
		US-2004/0214367 A1	10-28-2004	SEGAL et al.	
		US-2005/0041466 A1	02-24-2005	RUECKES et al.	
		US-2005/0047244 A1	03-03-2005	RUECKES et al.	
		US-2005/0056877 A1	03-17-2005	RUECKES et al.	
		US-6,128,214	10-03-2000	KUEKES et al.	
		US-6,159,620	12-12-2000	HEATH et al.	
		US-6,183,714	02-06-2000	SMALLEY et al.	
		US-6,198,655	03-06-2001	HEATH et al.	
		US-6,221,330 B1	04-24-2001	MOY et al.	
		US-6,232,706	05-15-2001	DAI et al.	
		US-6,445,006	09-03-2002	BRANDES et al.	
		US-6,518,156 B1	02-11-2003	CHEN	
M		US-6,559,468 B1	05-06-2003	KUEKES et al.	

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STATEMENT BY APPECANT (Use as many sheets as necessary)	Application 100. Firng Date First Named Inventor Art Unit Examiner Name	10/8/0,962 3/26/04 RUECKES et al. 2827 IBA Huan Hoang
2 / of · 4	Attorney Docket Number	112020.145YS2 NAN-21

HU	US-6,574,130	09-04-2003	SEGAL et al.	
ı ["	US-6,643,165	11-04-2003	SEGAL et al.	
	US-6,673,424 B1	01-06-2004	LINDSAY	
	US-6,706,402	03-16-2004	RUECKES et al.	
	US-6,750,471 B2	06-15-2004	BETHUNE et al.	
	US-6,759,693	07-06-2004	VOGELI et al.	
	US-6,774,052	08-10-2004	VOGELI et al.	
	US-6,781,166 B1	08-24-2004	LIEBER et al.	
HV	US-6,784,028	08-31-2004	RUECKES et al.	

	FOREIGN PATENT DOCUMENTS					
Examiner	Cite	Document Number	Publication Date	Name of Patentee or Applicant	Pages, Columns, Lines,	
Initials*	No.¹	Number-Kind Code <sup>2(tt known)</sup>	MM-DD-YYYY	of Cited Document	Where Relevant Passages or Relevant Figures Appear	
HU	:	WO 01/44796 A1	06-21-2001	Board of Trustees of the Leland Stanford Junior. University.		
HV-		WO 01/03208 A1	01-11-2001	President and Fellows of Harvard College	·	

	NON PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, volume-issue number(s), page(s), publisher, city and/or country where published.	T² ·		
HU	A1	AJAYAN, P.M., et al., "Nanometre-size tubes of carbon." Rep. Prog. Phys., 1997, Vol. 60, 1025-1062.			
	A2	AMI, S. et al., "Logic gates and memory cells based on single C <sub>60</sub> electromechanical transistors." <i>Nanotechnology</i> , 2001, Vol. 12, 44-52.			
	A3	AVOURIS, P., "Carbon nanotube electronics," Chem. Physics, 2002, Vol. 281, pp. 429-445.			
	A4	CASAVANT, M.J. et al., "Neat macroscopic membranes of aligned carbon nanotubes." <i>Journal of Appl. Phys.</i> , 2003, Vol. 93(4) 2153-2156.			
144	A5	CHOI, W. B. et al., "Carbon-nanotube-based nonvolatile memory with oxide- nitride-film and nanoscale channel." Appl. Phys. Lett., 2003, Vol. 82(2) 275-277.			

Examiner Signature Date Considered 5/1/05

EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). 'See Kinds Codes of USPTO Patent Documents at <a href="https://www.usnto.org/">https://www.usnto.org/</a> or MPEP 901.04. 'Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 'For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 'Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 'Applicant is to place a check mark here if English language Translation is attached.

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INFORMATION DISCLOSURE					Filing Date	March 26, 2004	
STATEMENT BY APPLICANT				APPLICANT	First Named Inventor	RUECKES et al.	
(Use as many sheets as necessary)			as necessary)	Art Unit	2827		
					Examiner Name	TBA Han Houng	
Sheet	3	V	of	4	Attorney Docket Number	112020.145YS2 NAN-21 /	

1111		CUI, J.B. et al., "Carbon Nanotube Memory Devices of High Charge Storage	
(4)	A6	Stability." Appl. Phys. Lett., 2002, Vol. 81(17) 3260-3262.	
1		DAI, H. et al., "Controlled Chemical Routes to Nanotube Architectures, Physics,	
1	A7	and Devices." J. Phys. Chem. B, 1999, Vol. 103, 111246-11255.	
		DEHON, A., "Array-Based Architecture for FET-Based, Nanoscale Electronics."	
	A8	IEEE Transactions on Nanotechnology, 2003, Vol. 2(1) 23-32.	
		DEQUESNES, M. et al., "Calculation of pull-in voltages for carbon-nanotube-based	
	A9	nanoelectromechanical switches." Nanotechnology, 2002, Vol. 13, 120-131.	
		DEQUESNES, M. et al., "Simulation of carbon nanotube-based	
	A10	nanoelectromechanical switches." Computational Nanoscience and	
		Nanotechnology, 2002, 383-386.	
		FAN, S. et al., "Carbon nanotube arrays on silicon substrates and their possible	
1	A11		
		FARAJIAN, A. A. et al., "Electronic transport through bent carbon	
	A12	nanotubes: Nanoelectromechanical sensors and switches." Phys. Rev.	
		B, 2003, Vol. 67, 205423-1 - 205423-6.	
		FISCHER, J.E. et al., "Magnetically aligned single wall carbon nanotube films:	
-	A13		
		2003, Vol. 93(4) 2157-2163.	
		FRANKLIN, N. R. et al., "Integration of suspended carbon nanotube arrays into	
	A14	electronic devices and electromechanical systems." Appl. Phys. Lett., 2002, Vol.	
		81(5) 913-915.	,
		FUHRER, M.S. et al., "High-Mobility Nanotube Transistor Memory." Nano Letters,	
	A15		
		HOMMA, Y. et al., "Growth of Suspended Carbon Nanotubes Networks on 100-	
	A16		
		KINARET, J.M. et al., "A carbon-nanotube-based nanorelay", Appl. Phys. Lett.,	
	A17	2000, 100,000,000	
		LEE, K.H. et al., "Control of growth orientation for carbon nanotubes." Appl. Phys.	
	A18		
		RADOSAVLJEVIC, M. et al., "Nonvolatile molecular memory elements based on	
1	A19	ambipolar nanotube field effect transistors." Nano Letters, 2002, Vol. 2(7) 761-764.	
IHV		ROBINSON, L.A.W., "Self-Aligned Electrodes for Suspended Carbon Nanotube	
(+(+	A20	Structures." Microelectronic Engineering, 2003, Vols. 67-68, 615-622.	

Examiner	14	1 L	Date	,-	<i>-</i>	100
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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. 'Applicant's unique citation designation number (optional). 2See Kinds Codes of USPTO Patent Documents at <a href="https://www.usoto.gov">www.usoto.gov</a> or MPEP 901.04. Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. \*Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. \*Applicant is to place a check mark here if English language Translation is attached.

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## STATEMENT BY APPLICANT

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Application No.	10/8/0,462
Filing Date	March 26, 2004
First Named Inventor	RUECKES et al.
Art Unit	2827
Examiner Name	TBA Than Houng
Attorney Docket Number	112020.145YS2 NAN-21

. HV	A21	RUECKES, T., et al., "Carbon Nanotube-Based Nonvolatile Random Access Memory for Molecular Computing" <i>Science</i> , 2000, Vol. 289, 94-97.	
	SOH, H. T. et al., "Integrated nanotube circuits: Controlled growth and ohmic contacting of single-walled carbon nanotubes." Appl. Phys. Lett., 1999, Vol. 75(5) 627-629.		,
	A23	SREEKUMAR, T.V., et al., "Single-wall Carbon Nanotube Films", Chem. Mater. 2003, Vol. 15, 175-178.	
	A24	TANS, S. et al., "Room-temperature transistor based on a single carbon nanotube." <i>Nature</i> , 1998, Vol. 393, 49-52.	
	A25	TOUR, J. M. et al., "NanoCell Electronic Memories." J. Am. Chem Soc., 2003, Vol. 125, 13279-13283.	
	A26	VERISSIMO-ALVES, M. et al., "Electromechanical effects in carbon nanotubes: Ab initio and analytical tight-binding calculations." Phys. Rev. B, 2003, Vol. 67, 161401-1 - 161401-4.	·
	A27	WOLF, S., Silicon Processing for the VLSI Era; Volume 2 – Process Integration, Multi-Level-Interconnect Technology for VLSI and ULSI, 1990, Section 4.3 Materials for Multilevel Interconnect Technologies, pp. 189-191, Lattice Press, Sunset Beach	
	A28	WOLF, S., Silicon Processing for the VLSI Era; Volume 2 – Process Integration, 1990, Section 4.7 Manufacturing Yield and Reliability Issues of VLSI Interconnects, pp. 260-273, Lattice Press, Sunset Beach	
LHA	A29	ZHAN, W. et al., "Microelectrochemical Logic Circuits." J. Am. Chem. Soc., 2003, Vol. 125, 9934-9935.	

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\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. \*Applicant's unique citation designation number (optional). \*See Kinds Codes of USPTO Patent Documents at <a href="https://www.usoto.oog">www.usoto.oog</a> or MPEP 901.04. \*Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). \*For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. \*Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. \*Applicant is to place a check mark here if English language Translation is attached.

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FINFORMATION DISCLOSURE	Application No.	10/810,962	
STATEMENT BY APPLICANT	Filing Date	March 26, 2004	
APR 1 5 2005 (Use as many sheets as necessary)	First Named Inventor	RUECKES, et al.	
l "1 64)	Art Unit	2018- 2827	
	Examiner Name	IBA Huan Hoping	
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Examiner Initials*	Cite No.1	Document Number  Number-Kind Code <sup>2(1) known)</sup>	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appea
WY		US-6,548,841	04-15-2003	FRAZIER et al.	
		US-6,803,840	10-12-2004	HUNT et al.	
#14		US-6,809,465	10-26-2004	JIN	
		US-			
		FOF	REIGN PATENT DOC	CUMENTS	
Examiner Initials*	Cite No.1	Document Number  Number-Kind Code <sup>2(// known)</sup>	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appea
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NON PATENT LITERATURE DOCUMENTS					
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